

Global LPG Motor Fuel Development

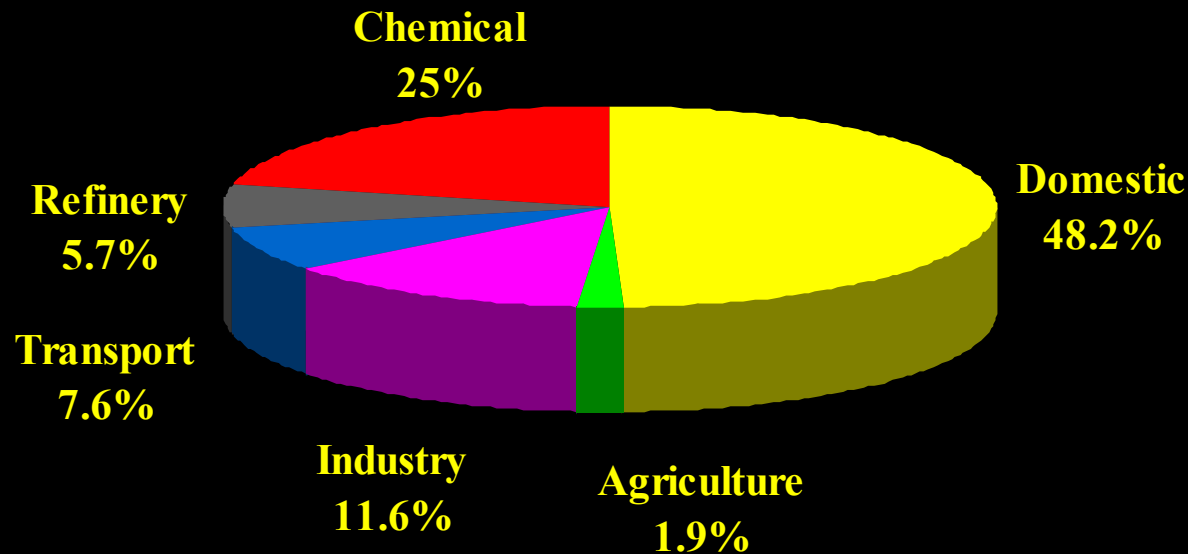
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Presentation Outline

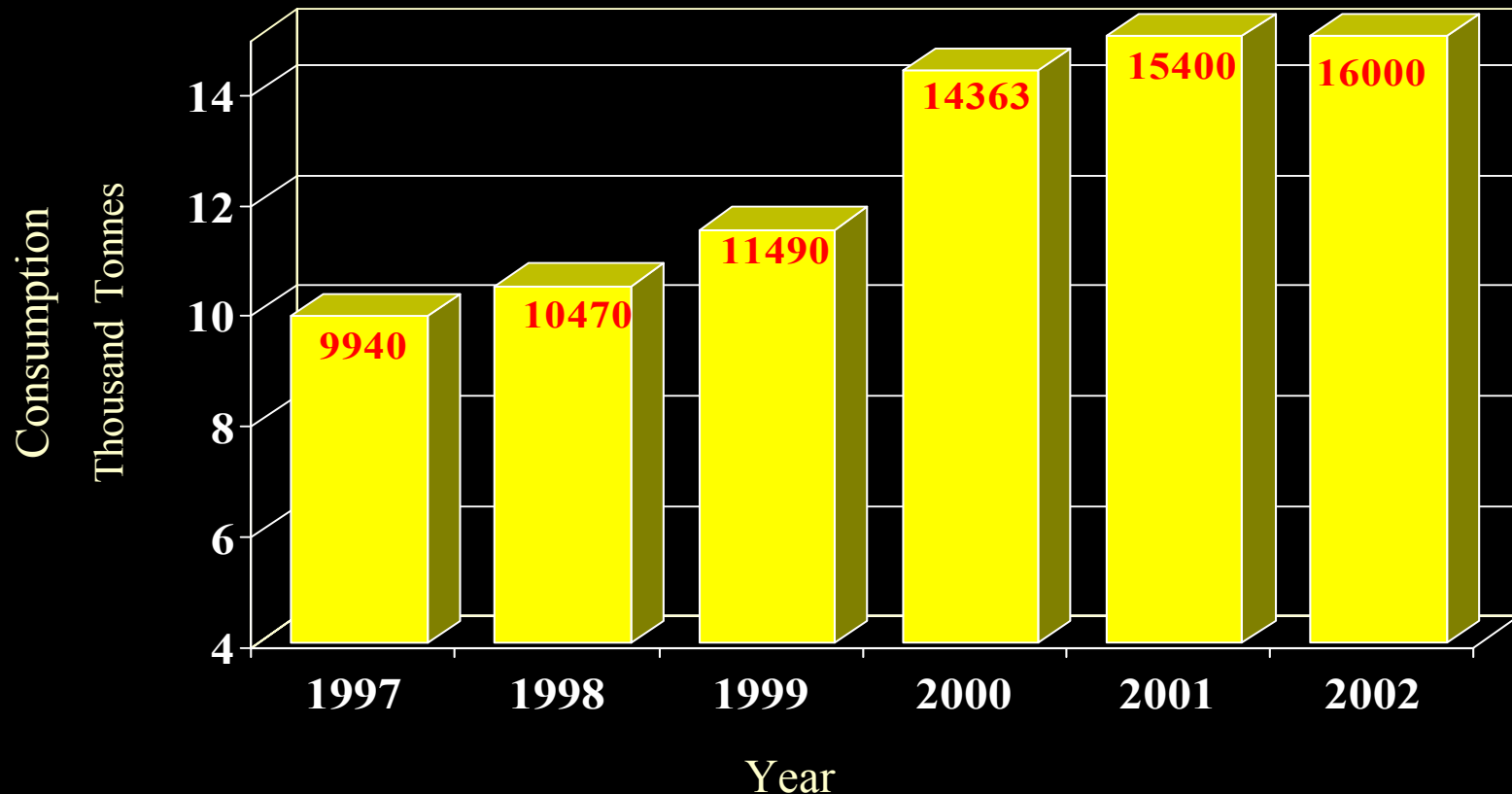
- **Global Autogas Market Development**
- **Rationale for Government**
- **Government Policy**
- **Industry Involvement**
- **Conclusions**

Global LPG Consumption By Sector 2002



Global LPG Motor Fuel Growth

Consumption



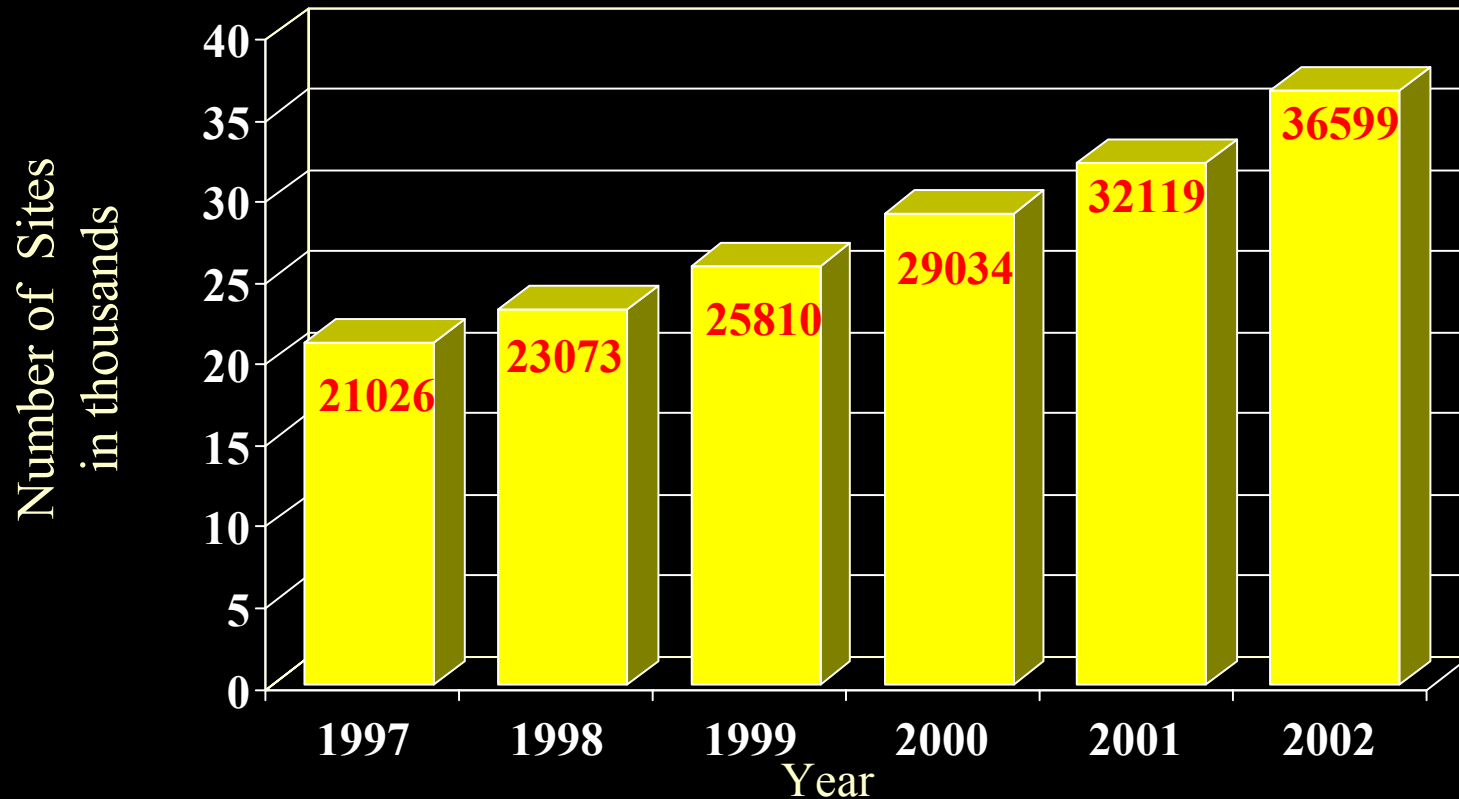
Global LPG Vehicle Growth

Vehicles Worldwide



Global LPG Infrastructure Growth

Refueling Stations Worldwide



Top 10 Autogas Consumers

Country Consumption (ooo tonnes)

- | | |
|---------------|------|
| • South Korea | 3360 |
| • Japan | 1543 |
| • Italy | 1326 |
| • Mexico | 1260 |
| • Australia | 1232 |
| • Turkey | 1141 |
| • Poland | 960 |
| • Russia | 750 |
| • USA | 740 |
| • Netherlands | 494 |

Top 10 Autogas Growth Markets

Country Growth

• Hong Kong	1075%
• United Kingdom	284%
• Pakistan	159%
• Bulgaria	108%
• Dominican Republic	94%
• Hungary	86%
• Sri Lanka	78%
• Poland	59%
• Iran	51%
• Germany	50%

Autogas - A Convincing Case

In many countries autogas continues to establish itself as the most important, practical and cost-effective solution to limiting the environmental impact of increasing road traffic.

Rationale for Government

Environmental Advantages

- Low vehicle emissions
- Capable of meeting the most stringent emissions requirements
- Significantly low levels of NO_x
- Very low non-regulated emissions
- Non-toxic
- No contamination of aquifers or soiled if spilled

Rationale for Government Vehicle Performance

- Power and driving range similar to conventionally fueled
- Over 9 million vehicles in operation
- High octane fuel
- Safe
- Factory warranty and services

Rationale for Government

Comparative Economics

- Cost effective infrastructure
- Distribution system exists
- Conversions simplified
- Increased OEM vehicles offered - (*economies of scale*)

Government Policies

The Role of Government

- Environmental improvement
- Establish appropriate fiscal and regulatory framework to correct environmental externalities
- Establish a level playing field for all alternative fuels
- Long-term policy commitment

Government Policies

Policies and Measures

- Fiscal and financial incentives
- Non-fiscal incentives
- Regulatory
- Technology development
- Voluntary agreements

Government Policies

Formulating Effective Strategies

- Dependant of specific national circumstances
 - budgets
 - levels of pollution
- Favourable tax treatment
- Grants and tax credits to lower vehicle costs
- Accelerated depreciation of fleet vehicles
- Assuring ultimate payback to end users

Industry Involvement

New Market Development –*Stakeholders*

- LP Gas industry
- Vehicle manufacturers (OEMs)
- Conversion companies
- Equipment suppliers

Industry Involvement

LP Gas Industry

- Global production and distribution facilities
- Product transportation
- Established refueling network
- Local, national, regional and global industry organizations established

Industry Involvement

Vehicle Manufacturers (OEMs)

- Virtually all major automotive manufacturers have introduced an autogas product
- New engine development for autogas vehicles
- Fuel systems and electronic engine management fully adapted for autogas vehicles
- Utilization of new innovative technology

Industry Involvement

Conversion and Equipment Suppliers

- Essential to market initiation and development
- Represents significant market size of current worldwide alternative vehicle use
- Excellent option for developing markets
- Valuable knowledge and experience

Conclusions

- Government and industry partnerships are an efficient and effective method to develop the market
- Collaboration of government and industry to foster growth and acceptance of autogas is essential
- Long-term policy commitment needed to maintain autogas support from all stakeholders
- World energy consumption continues to increase – diversification to cleaner forms of transportation fuels is critical

AUTOGAS

Clean and Economical Transportation Fuel

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